WHAT IS CLAIMED IS:

1. Method for simulating the diameter enlargement of a lesion of a blood vessel by means of an endovascular prosthesis, wherein a three-dimensional simulated image is visualized, showing the result of interaction between the lesion and the endovascular prosthesis after deployment of the latter, obtained by superposition of two three-dimensional images.

2. Method according to claim 1, wherein the two three-dimensional images comprise a first three-dimensional simulated image showing the endovascular prosthesis deployed, taking into account the resistance of the lesion, and a second three-dimensional simulated image showing the enlarged lesion following the deployment of the endovascular prosthesis.

3. Method according to claim 2, wherein the first three-dimensional simulated image showing the endovascular prosthesis deployed is obtained from a model of the implant.

4. Method according to claim 3, wherein the model of the implant is obtained from the mechanical characteristics of the prosthesis or from characteristics of the prosthesis and a three-dimensional image of the contracted prosthesis.

5. Method according to one of claim 2, wherein the second three-dimensional simulated image showing the enlarged lesion is obtained from a model of the lesion.

6. Method according to one of claim 3, wherein the second three-dimensional simulated image showing the enlarged lesion is obtained from a model of the lesion.

7. Method according to one of claim 4, wherein the second three-dimensional simulated image showing the enlarged lesion is obtained from a model of the lesion.

8. Method according to claim 2, wherein the model of the lesion is obtained from the composition and biomechanical properties of the blood vessels and surrounding atheromatous plaques and from a three-dimensional image of the lesion.

9. Method according to claim 3, wherein the model of the lesion is obtained from the composition and biomechanical properties of the blood vessels and surrounding atheromatous plaques and from a three-dimensional image of the lesion.

10. Method according to claim 4, wherein the model of the lesion is obtained from the composition and biomechanical properties of the blood vessels and surrounding atheromatous plaques and from a three-dimensional image of the lesion.

11. Method according to claim 5, wherein the model of the lesion is obtained from the composition and biomechanical properties of the blood vessels and surrounding atheromatous plaques and from a three-dimensional image of the lesion.

12. Method according to claim 3, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

13. Method according to claim 4, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

14. Method according to claim 5, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and

then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

15. Method according to claim 6, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

16. Method according to claim 7, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

17. Method according to claim 8, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

18. Method according to claim 9, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

19. Method according to claim 10, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the

prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

20. Method according to claim 3, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

21. Method according to claim 4, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

22. Method according to claim 5, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

23. Method according to claim 6, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

24. Method according to claim 7, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

25. Method according to claim 8, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

26. Method according to claim 9, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

27. Method according to claim 10, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

28. Method according to claim 11, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

29. Method according to claim 12, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

30. Method according to claim 13, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

31. Method according to claim 14, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

32. Method according to claim 15, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

33. Method according to claim 16, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

34. Method according to claim 17, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

35. Method according to claim 18, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

36. Method according to claim 5, wherein the model of the lesion is established by means of the finite-element method.

37. Method according to claim 6, wherein the model of the lesion is established by means of the finite-element method.

38. Method according to claim 7, wherein the model of the lesion is established by means of the finite-element method.

39. Method according to claim 8, wherein the model of the lesion is established by means of the finite-element method.

40. Method according to claim 9, wherein the model of the lesion is established by means of the finite-element method.

41. Method according to claim 10, wherein the model of the lesion is established by means of the finite-element method.

42. Method according to claim 11, wherein the model of the lesion is established by means of the finite-element method.

43. Method according to claim 12, wherein the model of the lesion is established by means of the finite-element method.

44. Method according to claim 13, wherein the model of the lesion is established by means of the finite-element method.

45. Method according to claim 14, wherein the model of the lesion is established by means of the finite-element method.

46. Method according to claim 15, wherein the model of the lesion is established by means of the finite-element method.

47. Method according to claim 16, wherein the model of the lesion is established by means of the finite-element method.

48. Method according to claim 17, wherein the model of the lesion is established by means of the finite-element method.

49. Method according to claim 18, wherein the model of the lesion is established by means of the finite-element method.

50. Method according to claim 19, wherein the model of the lesion is established by means of the finite-element method.

51. Method according to claim 20, wherein the model of the lesion is established by means of the finite-element method.

52. Method according to claim 21, wherein the model of the lesion is established by means of the finite-element method.

53. Method according to claim 22, wherein the model of the lesion is established by means of the finite-element method.

54. Method according to claim 23, wherein the model of the lesion is established by means of the finite-element method.

55. Method according to claim 24, wherein the model of the lesion is established by means of the finite-element method.

56. Method according to claim 1, wherein on an effective deployment of the prosthesis in the lesion, the instantaneous state of the endovascular prosthesis and shape of the lesion are taken into account in order to simulate and visualize in three dimensions a future state of the endovascular prosthesis and of the lesion as a function of possible actions indicated by an operator.

57. System to simulate the diameter enlargement of a lesion of a blood vessel comprising:

means for providing an endovascular prosthesis;

means for providing a computer equipped with data storage;

means for processing and display;

means for visualizing a three-dimensional simulated image showing the result of interaction between the lesion and the endovascular prosthesis after deployment of the prosthesis, the three-dimensional simulated image being obtained by superposition of two three-dimensional images; and

the means for providing a computer being optionally connected to a means a pick-up system.

58. A computer data storage means comprising a computer program, which enables a computer to execute:

the procedure of synthesis of the model of an endovascular prosthesis and of the model of a lesion of a blood vessel in order to simulate the interaction between the lesion and the endovascular prosthesis after deployment of the latter, and

the procedure of display on a screen of a three-dimensional simulated image showing the result of the interaction.